

WHAT IS CLAIMED IS:

1. A socket for a lighting assembly, the socket comprising:

a rigid socket body with a base wall and a unitary second wall extending a first distance from the base wall for defining an enclosure and a rim at an end of the second wall such that a lighting element with a pin contact can extend past the rim into the enclosure and wherein the second wall includes a seal element for sealing between the second wall and a lamp; and

at least one cylindrical electrical connector spaced from the second wall for contacting a connector on a lighting element.

2. The socket of claim 1 wherein the connector extends from the base wall into the enclosure to a point within the enclosure spaced from the rim.

3. The socket of claim 1 wherein the seal is an O-ring seal element positioned adjacent the rim.

4. The socket of claim 3 wherein the second wall includes an interior surface and wherein the O-ring seal is positioned on the interior surface of the wall.

5. The socket of claim 3 further including a lamp having a lamp body, a lamp end at an end of the body having a base and at least one pin connector extending away from the lamp base and wherein the lighting element extends into the socket such that the O-ring seal engages and seals between the second wall and the lamp body.

6. The socket of claim 5 wherein the base wall is a substantially flat wall and wherein the at least one connector includes two cylindrical electrical connectors spaced

apart and extending from the base wall spaced from the second wall and wherein the second wall extends beyond the ends of the cylindrical connectors and wherein the O-ring seal is positioned on the second wall between the ends of the cylindrical connectors and the rim.

7. The socket of claim 1 wherein the second wall includes an outer surface and wherein the outer surface includes at least one engagement surface for accepting a support for supporting the socket.

8. The socket of claim 7 wherein the engagement surface is a groove extending about a circumference of the second wall.

9. The socket of claim 8 wherein the groove has a longitudinal width and wherein the socket further includes a support for supporting the socket including a support element having a longitudinal width approximately the same as the longitudinal width of the groove.

10. The socket of claim 8 wherein the groove has a longitudinal width and wherein the socket further includes a support for supporting the socket including a support element having a longitudinal width smaller than the longitudinal width of the groove.

11. The socket of claim 8 wherein the groove on the socket has a shape and wherein the socket further includes a support for supporting the socket including a support element having a configuration at least in part conforming to the shape of the groove.

12. The socket of claim 7 wherein the engagement surface is at least two grooves spaced longitudinally relative to each other.

13. A socket for a lighting assembly, the socket comprising:

a socket body with a base wall and a second, housing wall extending a first distance from the base wall for defining an enclosure for receiving an end of a lighting element and a rim at an end of the enclosure such that a lighting element having a pin contact can extend past the rim into the enclosure; and

at least one cylindrical electrical connector spaced from the second wall and extending into the enclosure from the base wall only part way to the rim of the enclosure for contacting a connector on a lighting element wherein the second wall extends past the end of the cylindrical connector.

14. The socket of claim 13 wherein the housing is at least twice length of the connector so that the enclosure surrounds at least part of the lighting element in addition to the pin contact.

15. The socket of claim 13 wherein the at least one cylindrical connector includes two cylindrical connectors spaced apart from each other and extending from the base wall of the socket, wherein the second wall defines an interior surface which is substantially circular to accept a lighting element and the second wall extends from the base wall a distance at least twice the second distance and further including a lamp having a lamp body, a lamp end at an end of the body having a base and two pin connectors extending away from the lamp base and wherein the lighting element extends into the socket such that the pin connectors electrically contact the cylindrical connectors and wherein the second wall extends around the pin connectors on the lamp and past the base of the lamp to enclose the base and at least part of the lamp body.

16. The socket and lamp of claim 15 wherein the socket is a rigid socket and wherein the cylindrical connectors are aligned substantially parallel to the axis of the body

of the socket.

17. The socket and lamp of claim 16 further comprising a seal for sealing around the lamp.

18. The socket and lamp of claim 17 wherein the second wall includes an O-ring groove adjacent the rim for sealing between the lamp and the socket wall.

19. The socket and lamp of claim 18 wherein the socket further includes conductors for supplying current to the connectors and a wall defining an opening for the conductors and further comprising a seal for the conductors so that the socket connection is sealed inside the socket.

20. The socket of claim 13 wherein the second wall includes a seal element for sealing between the second wall and a lamp.

21. The socket of claim 20 wherein seal element includes an O-ring seal positioned in the second wall.

22. A socket for a lighting assembly, the socket comprising:

a socket body with a base wall and a second wall extending a first distance from the base wall for defining an enclosure and a rim at an end of the enclosure such that a lighting element with a pin contact can extend past the rim into the enclosure; and

at least one cylindrical electrical connector spaced from the second wall for contacting a connector on a lighting element; and

a holder for the socket body and movable at least one of rotatably and slidably relative to the socket body and the holder further including a mounting element for mounting the holder to a mounting surface.

23. The socket of claim 22 wherein the socket further includes a groove extending about a circumference of the second wall for accepting the holder.

24. The socket of claim 22 wherein the holder includes a socket engagement element having a length and wherein the groove on the socket is sized to have a longitudinal length greater than the length of the socket engagement element.

25. The socket of claim 22 further comprising a second groove spaced from the first groove for accepting a holder.

26. The socket of claim 22 wherein the socket is separable from the holder.

27. The socket of claim 26 wherein the holder includes a resilient holding element for engaging and releasably holding the socket.

28. The socket of claim 27 further including a mounting surface to which the

holder is mounted and positioned for supporting the socket, wherein the holder is movable to another position relative to the mounting surface.

29. The socket of claim 28 wherein the holder mounting element is a spring biased mounting element.

30. The socket of claim 28 wherein the mounting surface includes a track.

31. The socket of claim 28 wherein the holder mounting element is a spring biased mounting element and wherein the mounting surface includes a track and the spring biased mounting element engages the track.

32. A socket for a lighting assembly, the socket comprising:

a socket body with a base wall having a center, and a second wall extending a first distance from the base wall for defining an enclosure and a rim at an end of the enclosure such that a lighting element with a pin contact can extend past the rim into the enclosure; and

at least two pair of cylindrical electrical connectors wherein each connector in each pair is positioned approximately equidistant from a center of the base wall relative to the other connector in the pair and wherein the spacing for one pair is different than the spacing for the other pair.

33. The socket of claim 32 wherein the at least two pair of connectors are oriented in an approximate criss-cross pattern.

34. The socket of claim 33 wherein the first pair of connectors accept pins from a T-8 sized fluorescent lamp and wherein the second pair of connectors accept pins from a

T-5 sized fluorescent lamp.

35. The socket of claim 34 further comprising an indicator on the socket indicating the relative position in the socket of at least one of the cylindrical connectors.

36. The socket of claim 32 wherein the connectors are spaced from the second wall and extend a second distance less than the first distance from the base wall for contacting connectors on a lighting element.

37. A socket for a lighting assembly, the socket comprising:

a socket body including a base and at least one electrical connector for contacting a connector on a lighting element;

a lamp having an end and a contact on the end and a body for passing light out of the lamp, and wherein the lamp includes an insulator on the end of the lamp for protecting the contact on the end of the lamp; and

wherein the contact is engaged with the connector and wherein the connector includes a projection engaging the insulator.

38. The socket and lamp of claim 37 wherein the projection includes a barb on the connector biased outwardly.

39. The socket and lamp of claim 38 wherein the socket includes four connectors, each of which includes a barb engaging the insulator.

40. The socket and lamp of claim 38 wherein the socket further includes alignment indicators for indicating the location of the connectors.

41. A socket for a lighting assembly, the socket comprising:

a rigid socket body with a base wall and a unitary housing wall extending from the base wall to a rim and defining an enclosure such that a lighting element with a pin contact can extend past the rim into the enclosure and wherein the second wall includes a seal wall and a seal element in the seal wall for sealing between the housing wall and a lamp; and at least one cylindrical electrical connector spaced from the second wall for contacting a connector on a lighting element.

42. The socket of claim 41 wherein the seal element in the wall is compressible against the wall of the socket.

43. The socket of claim 41 wherein the seal is substantially circular.

44. The socket of claim 41 wherein the cylindrical connector extends substantially parallel to the axis of the housing wall.

45. A method for creating a seal around a lamp between the lamp and a socket, the method comprising the steps of :

providing a socket with a base and a connector in the base and extending from the base, and a housing wall having a sealing element in the housing wall;

providing a lamp having a connector on an end thereof; and

inserting the lamp into the housing so that the connector on the lamp engages the connector on socket and so that the sealing element seals between the socket and the lamp as the lamp is being pushed into the housing.

46. The method of claim 45 wherein the step of providing a socket with a

sealing element includes the step of placing an O-ring seal in a groove in the wall of the socket.

47. The method of claim 45 further comprising the step of placing an insulator on the end of the lamp.

48. A socket and lamp insulator combination, the combination comprising:

a lamp having a body and at least one end with a pin connector having a first diameter on the end of the lamp;

an insulator covering the end of the lamp and the pin connector and having a wall defining an opening in at least one surface of the lamp having a diameter less than the diameter of the pin to provide an interference fit; and

a socket having a socket body and including at least one electrical connector extending longitudinally of the socket for contacting the pin connector on the lamp, and wherein the socket body extends over the lamp such that the electrical connector engages the pin connector and the insulator and wherein the socket encloses a portion of the lamp body.

49. The combination of claim 48 wherein the electrical connector includes engagement means for engaging the insulator on the lamp.

50. The combination of claim 49 wherein the engagement means includes a barb.

51. A light assembly, the assembly comprising:

a first socket body with a base wall and a second wall extending a first distance from the base wall for defining an enclosure and a rim at an end of the enclosure such that

a lighting element with a pin contact can extend past the rim into the enclosure; and
at least one cylindrical electrical connector spaced from the second wall and extending a second distance less than the first distance from the base wall for contacting a connector on a lighting element wherein the second wall extends past the end of the cylindrical connector;

a second socket having a second socket body;

a holder for the first socket body and movable at least one of rotatably and slidably relative to the socket body and the holder further including a mounting element for mounting the holder to a mounting surface;

a holder for the second socket body;

a lamp having first and second ends and respective electrical contacts on the first and second ends, the first end inserted into the first socket and having contacts connected to the contacts in the socket and the second end inserted into the second socket and having contacts connected to contacts in the second socket and wherein the sockets are aligned with the longitudinal axis of the lamp.

52. The assembly of claim 51 wherein the socket further comprises a seal for sealing around the lamp.

53. The socket and lamp of claim 52 wherein the second wall includes an O-ring groove adjacent the rim for sealing between the lamp and the socket wall.

54. The assembly of claim 51 wherein the second wall includes an outer surface and wherein the outer surface includes at least one engagement surface for accepting a support for supporting the socket.

55. The assembly of claim 54 wherein the engagement surface is a groove extending about a circumference of the second wall.

56. The assembly of claim 54 wherein the groove has a longitudinal width and wherein the socket further includes a support for supporting the socket including a support element having a longitudinal width approximately the same as the longitudinal width of the groove.

57. The assembly of claim 54 wherein the groove has a longitudinal width and wherein the socket further includes a support for supporting the socket including a support element having a longitudinal width smaller than the longitudinal width of the groove.

58. The assembly of claim 54 wherein the groove on the socket has a shape and wherein the socket further includes a support for supporting the socket including a support element having a configuration at least in part conforming to the shape of the groove.

59. The assembly of claim 54 wherein the engagement surface is at least two grooves spaced longitudinally relative to each other.

60. The assembly and lamp of 59 wherein lamp further includes an insulator and wherein the electrical connector in the socket includes a projection on the connector biased outwardly into the insulator.

61. The assembly and lamp of claim 60 wherein the socket includes four connectors, each of which includes a projection in the form of a barb engaging the insulator.

62. The assembly of claim 51 wherein the rim defines an opening in the socket having a first diameter and further comprising an adaptor for reducing the size of the

openin in the socket for accepting a lamp having a smaller diameter.

63. The assembly of claim 62 wherein the adaptor includes a sealing element on an internal surface for forming a seal between the lamp and the adaptor.

64. The assembly of claim 63 wherein the socket includes a key surface and wherein the adaptor further includes a key way for engaging the key surface on the socket.

65. A fluorescent lamp combination comprising:

a fluorescent lamp having a bulb portion and having two ends, each end being defined by a base mounted to a respective end of the bulb portion, and each base having an end face and respective pin connectors extending from the end face for connecting to a lamp socket; and

a lamp insulator on at least one end of the lamp for insulating the pin connector.

66. The combination of claim 65 wherein the insulator includes a wall defining a bore for accepting the pin connector and wherein the bore is smaller in diameter than the pin diameter.

67. The combination of claim 65 wherein the insulator has a height and the pin connectors have a height and wherein the height of the pin connectors is less than the height of the insulator.

68. The combination of claim 65 wherein the insulator includes a second wall defining an counterbore for accepting a connector for a socket connection wherein the counterbore includes a diameter greater than the diameter of the bore.

69. The combination of claim 68 wherein the insulator further comprises additional walls defining additional bores for accepting connectors from a socket corresponding to other connectors on a lamp.

70. A lamp and insulator combination comprising:

a fluorescent lamp having a lamp body and at least one end including at least one exposed conductor; and

an insulator having a surface and covering the at least one end and also covering the at least one conductor and engaging the conductor so as to inhibit the removal of the insulator from the lamp so that the conductor is recessed below the surface of the insulator.